

Subcommittee on Spatial Water Data Report to FGDC Coordination Group

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Geospatial
Program*

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OWDI Roadmap

Open Water Web

Water Data Catalog	Water Data as a Service	Enriching Water Data	Community for Water Data, Tools
Find Source Data	Consensus Standards	Network Routing	Marketplace for Knowledge
Create Themes	Visualization and Delivery	Coupling Models	Usage Tracking
Recruit / Engage Partners	Catalog and Serve	Geospatial Framework	Best Practices

OWDI Use Cases



Use Case 1:

National Flood Interoperability Experiment

Completed



Use Case 2:

Drought Decision Support System



Use Case 3:

Spill Response Tool

Flow Continuum Model – a national stream network, atmosphere to oceans, coast to coast

Blanco River at Wimberley

Current: 6600 basins and 3600 forecast points

Two basins and one forecast point



Watershed Hydrology – basins and outlet points

becomes



Continental Hydrology – network flow continuum

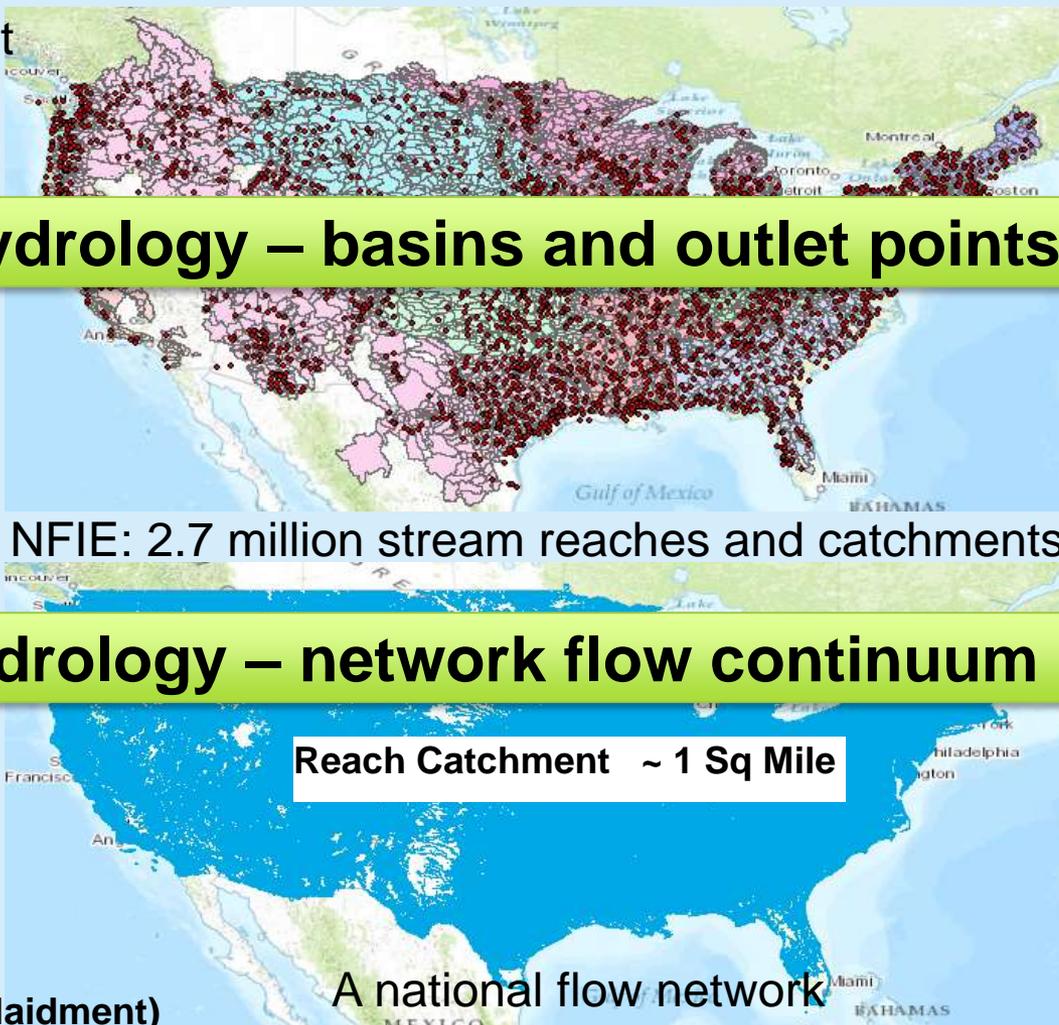
NFIE: 2.7 million stream reaches and catchments

Reach Catchment ~ 1 Sq Mile

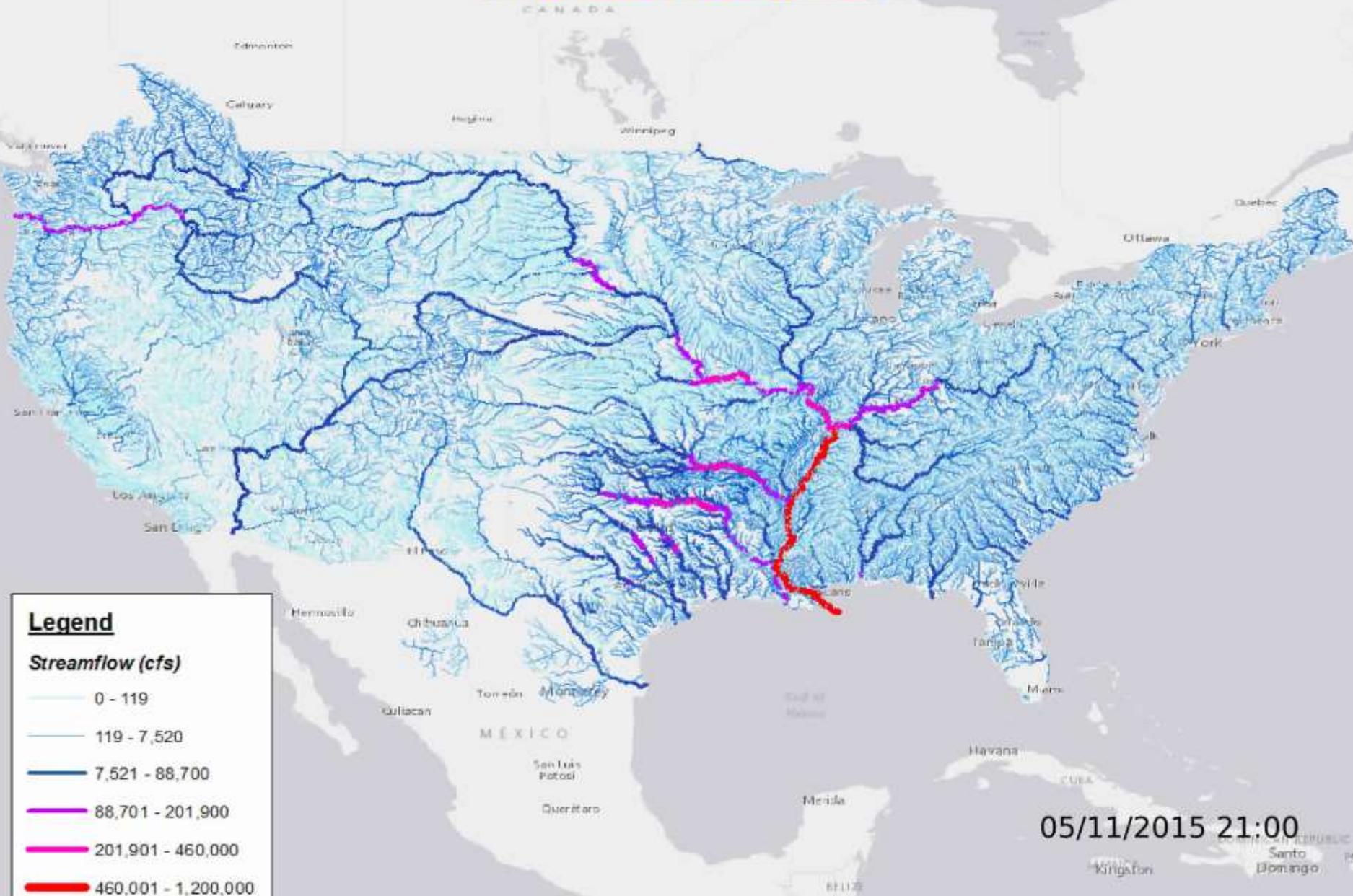
130 Catchments and Flowlines uniquely labelled

(Slide: David Maidment)

A national flow network



National Water Model



Legend

Streamflow (cfs)

- 0 - 119
- 119 - 7,520
- 7,521 - 88,700
- 88,701 - 201,900
- 201,901 - 460,000
- 460,001 - 1,200,000

05/11/2015 21:00

(Slide: David Maidment)

Data Inventory Dashboard

Water Data Catalog



Open Water Web

- Water Data Catalog
- Water Data as a Service
- Enriching Water Data
- Community for Water Data, Tools

USGS The National Map
National System of Geographic Information

Open Water Data Initiative (OWDI) Water Use Dataset Workgroup

Summary

The Open Water Data Initiative (OWDI) Water Use Dataset Workgroup folder within Sciencebase contains a brief report that documents existing water use datasets and their primary characteristics, identifies important water use data gaps and current efforts to address those gaps, and provides recommendations on how to incorporate water use datasets into the OWDI framework. It will also serve as a repository for a water use dataset inventory and support an interface that details the current status of national, regional, state and local water use datasets, and provides access back to the online data sources.

Water Use Dataset Resources

Click on the tabs below for further information.

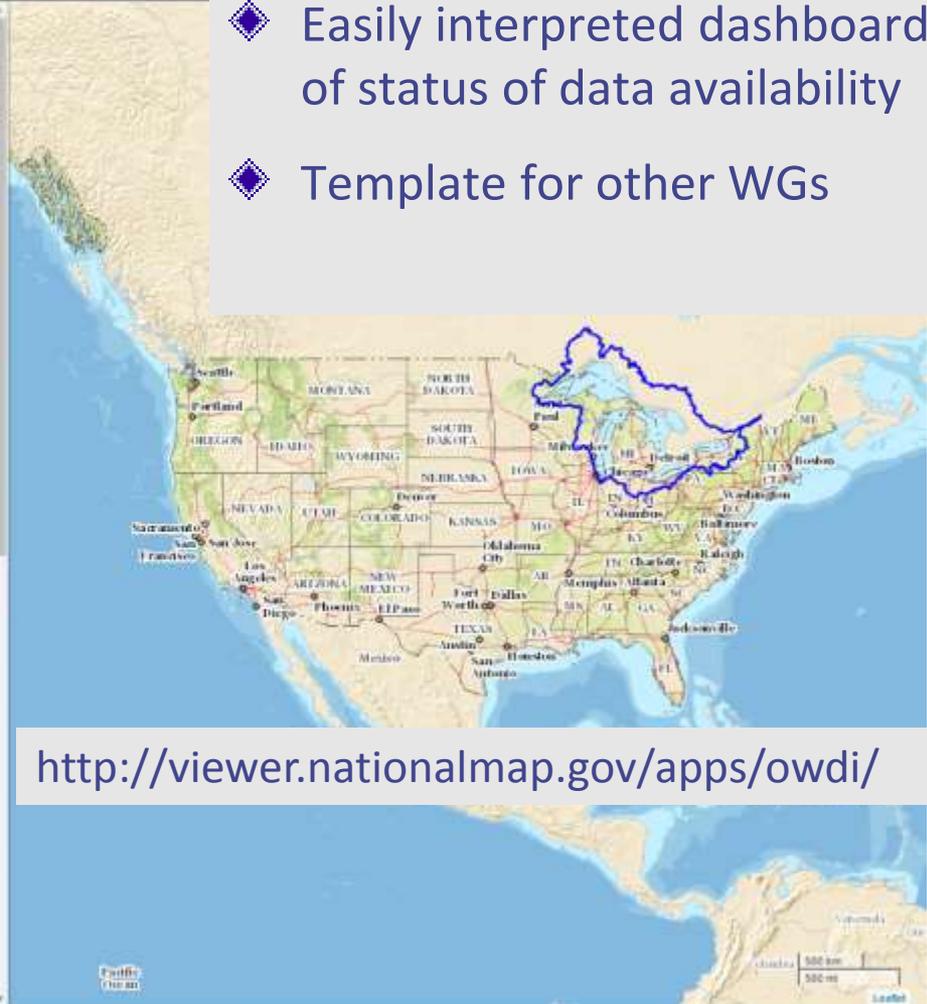
Openly Published: 196 Pending: 592 What is "Openly Published"?

- Ground Water Protection Council - Fractious
- Ground Water Protection Council/ U.S. Energy Information Administration - Open EJ
- Lawrence Livermore National Laboratory - National and State Water-Energy Sankey Diagrams
- USGS Ancillary Estimates of Water Use - 1985 - 1995
- USGS Consumptive Use Estimates - 1965 - 1995
- USGS National Groundwater Monitoring Network Portal
- USGS Principal Aquifer Withdrawals - 2000
- USGS Water Withdrawals - 1950 - 2010
- Dept. of Energy / Sandia National Laboratory Energy and Water in the Western and Texas Interconnects
- Great Lakes Commission - Great Lakes Regional Water Use Database

Provides comparable water use information on withdrawals, diversions and consumptive uses for the Great Lakes Commission (<http://www.glc.org>).

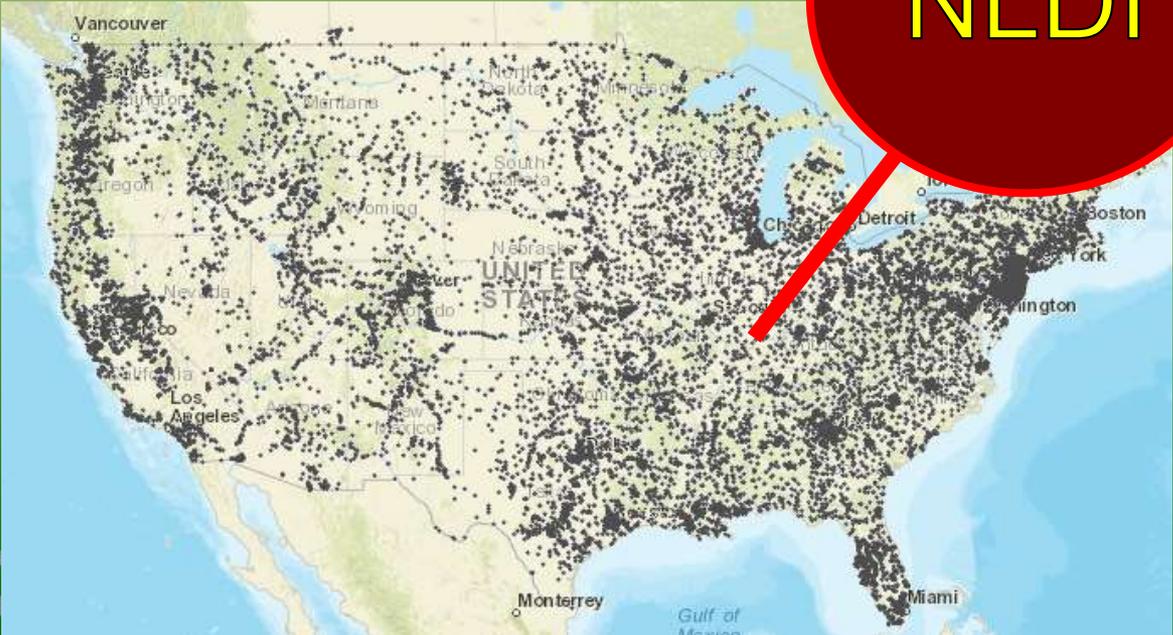
Publication Format: Annual reports, website (can query the database)
Published using "Open" formats? Yes, database can be queried through the website, but cannot be accessed in an automated fashion (web services)
Period of Record: 1994 - 2014
Timestep: Annual
Spatial Extent: By jurisdiction (state and province), by basin, and by sector of use

- ◆ Water Use WG – offshoot of the Drought Group
- ◆ Easily interpreted dashboard of status of data availability
- ◆ Template for other WGs



<http://viewer.nationalmap.gov/apps/owdi/>

An application: River Network Linked Data

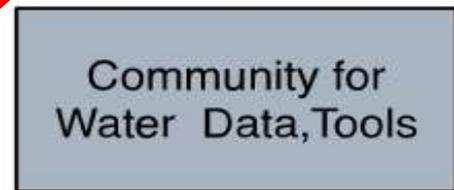
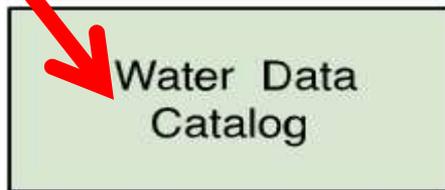


(Slide: Dave Blodgett)

What is NLDI?

- Network Linked Data Index
- It's a search engine for hydro network-linked data (like Google, but more powerful!)
- Queries using stream network (NHDPlus)
- Extensible design—any surface-water data can be linked and shared via web services
- Developed by USGS, in collaboration with EPA, as part of the Open Water Data Initiative (OWDI)
- Open source: <https://github.com/ACWI-SSWD>

Open Water Web



<https://cida.usgs.gov/nldi/huc12pp/030801011008>

Hydrologic Unit Code

030801011008

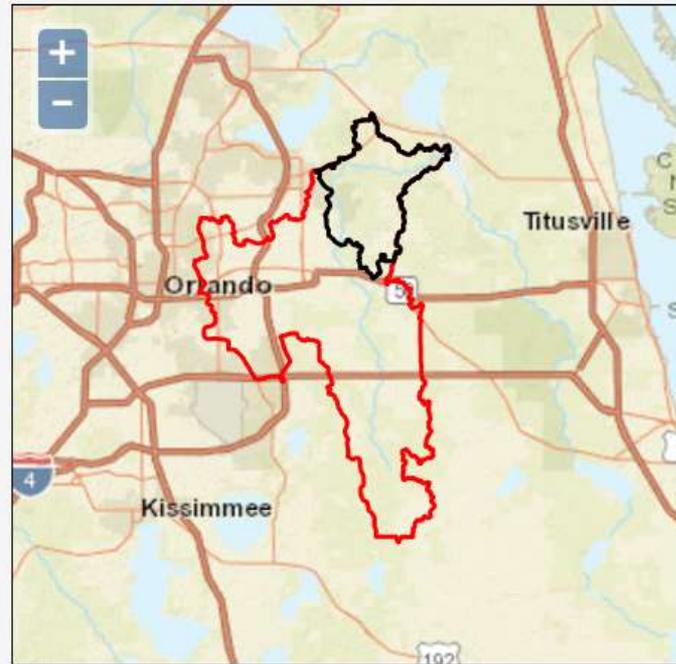
Watershed Name

Lower Econolockhatchee River

HUC Watershed Drainage Area (km²)

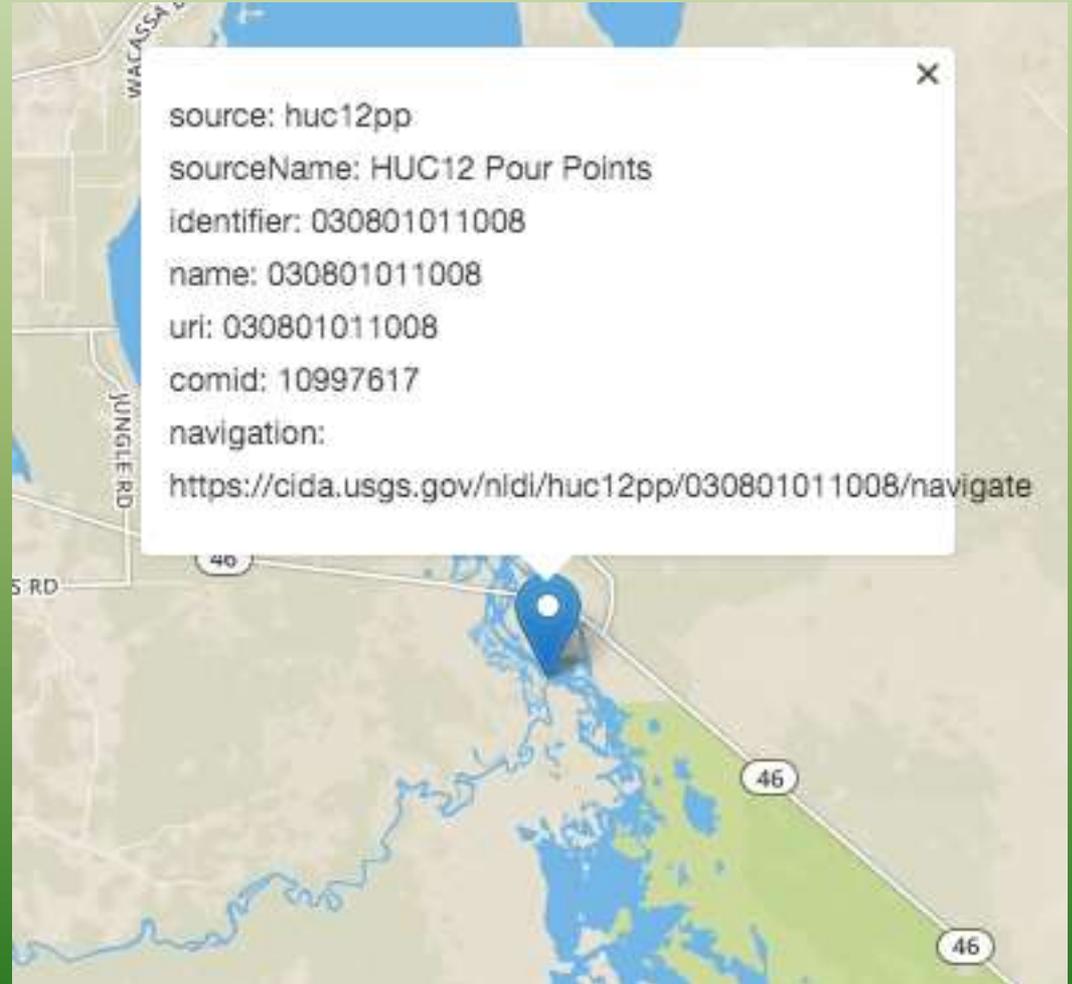
Local Incremental: 138.05

Total Upstream: 691.64



Local Incremental Watershed: —

Total Upstream Watershed: —



(Slide: Dave Blodgett)

<https://cida.usgs.gov/nldi/huc12pp/030801011008>

... navigate/DD

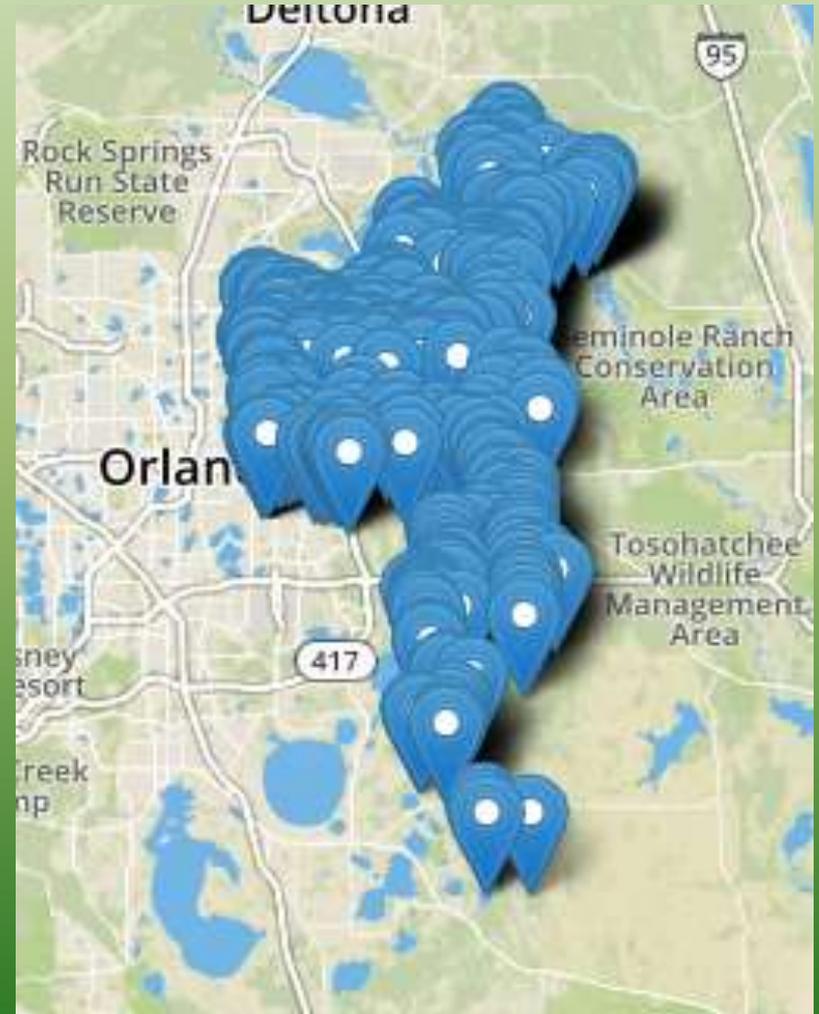
Zoomed In



<https://cida.usgs.gov/nldi/huc12pp/030801011008>

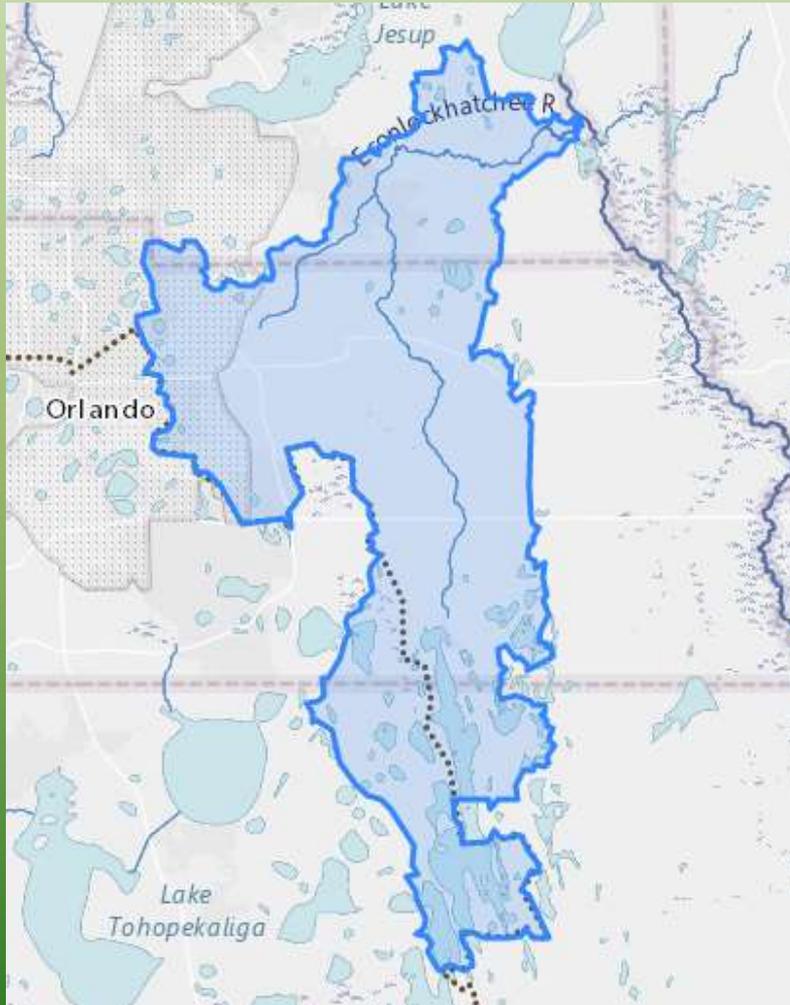
... navigate/UT/nwissite

... navigate/UT/wqp



<https://DEV/nldi/huc12pp/030801011008>

... [navigate/UT/basin](#)



Future possibilities...

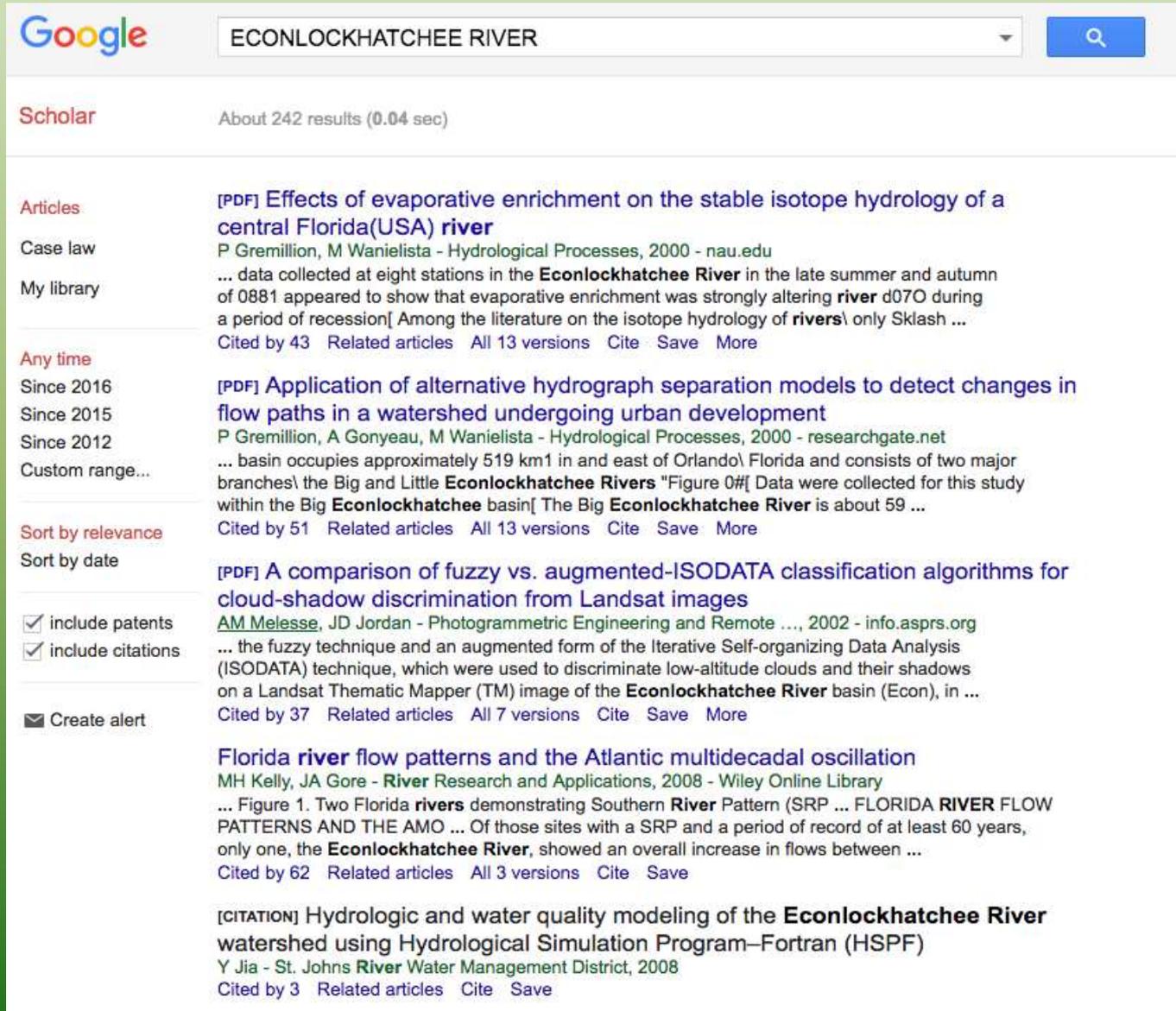
.../[navigate/UT/characteristics](#)

Local and accumulated catchment characteristics!

.../[navigate/UT/nwm](#)

URL to NWM forecasts and other information products!

Can we index research?!? What Else?



Google Scholar search for "ECONLOCKHATCHEE RIVER". The search results page shows approximately 242 results in 0.04 seconds. The left sidebar contains filters for "Articles", "Case law", "My library", "Any time" (with options for "Since 2016", "Since 2015", "Since 2012", and "Custom range..."), "Sort by relevance", "Sort by date", "include patents", "include citations", and "Create alert". The main content area displays several search results, each with a title, author, source, and citation information.

Articles

[PDF] Effects of evaporative enrichment on the stable isotope hydrology of a central Florida(USA) river
P Gremillion, M Wanielista - Hydrological Processes, 2000 - nau.edu
... data collected at eight stations in the **Econlockhatchee River** in the late summer and autumn of 0881 appeared to show that evaporative enrichment was strongly altering **river** d07O during a period of recession[Among the literature on the isotope hydrology of **rivers**\ only Sklash ...
Cited by 43 Related articles All 13 versions Cite Save More

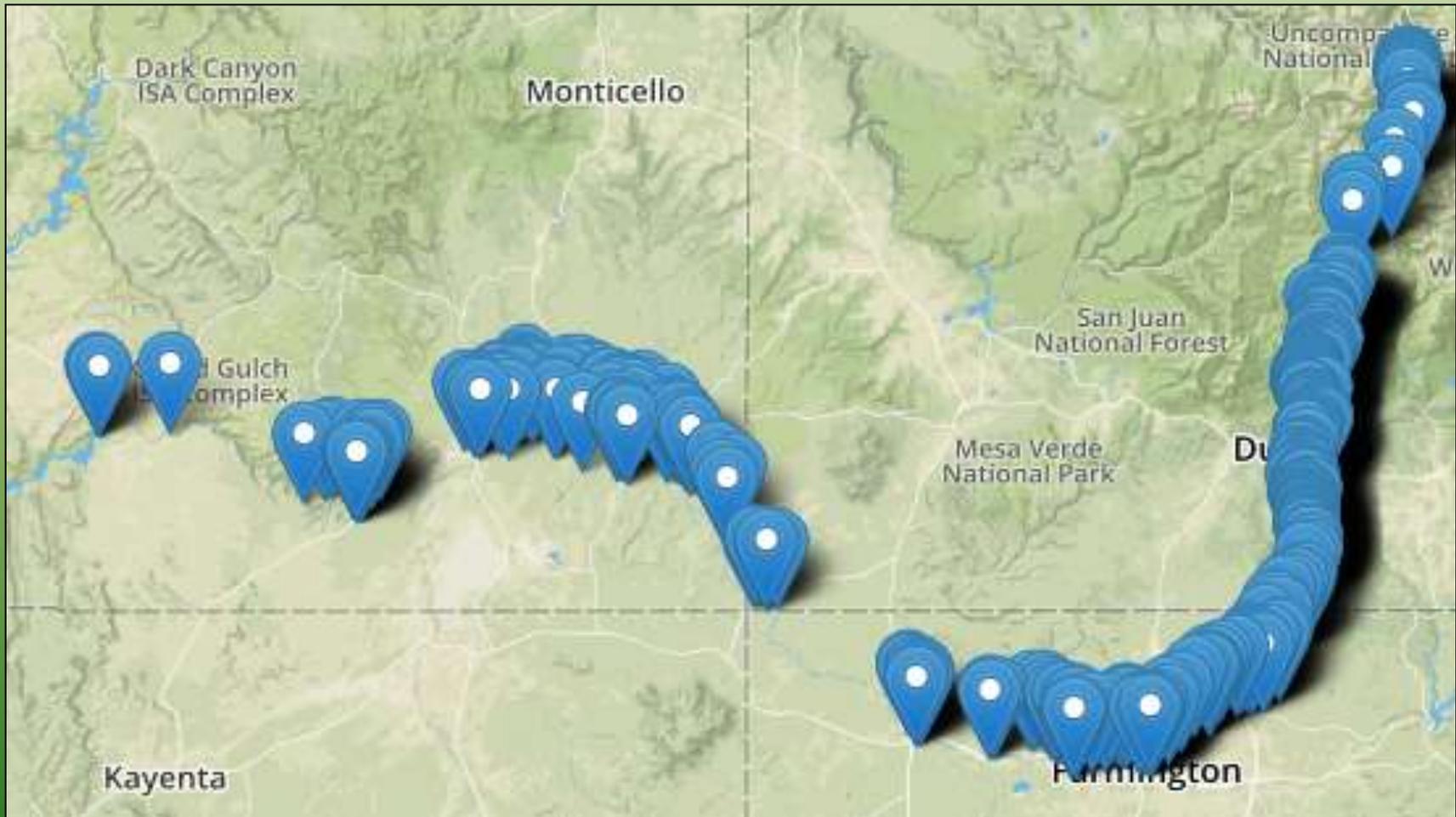
[PDF] Application of alternative hydrograph separation models to detect changes in flow paths in a watershed undergoing urban development
P Gremillion, A Gonyeau, M Wanielista - Hydrological Processes, 2000 - researchgate.net
... basin occupies approximately 519 km1 in and east of Orlando\ Florida and consists of two major branches\ the Big and Little **Econlockhatchee Rivers** "Figure 0#[Data were collected for this study within the Big **Econlockhatchee** basin[The Big **Econlockhatchee River** is about 59 ...
Cited by 51 Related articles All 13 versions Cite Save More

[PDF] A comparison of fuzzy vs. augmented-ISODATA classification algorithms for cloud-shadow discrimination from Landsat images
AM Melesse, JD Jordan - Photogrammetric Engineering and Remote ..., 2002 - info.asprs.org
... the fuzzy technique and an augmented form of the Iterative Self-organizing Data Analysis (ISODATA) technique, which were used to discriminate low-altitude clouds and their shadows on a Landsat Thematic Mapper (TM) image of the **Econlockhatchee River** basin (Econ), in ...
Cited by 37 Related articles All 7 versions Cite Save More

Florida river flow patterns and the Atlantic multidecadal oscillation
MH Kelly, JA Gore - **River** Research and Applications, 2008 - Wiley Online Library
... Figure 1. Two Florida **rivers** demonstrating Southern **River** Pattern (SRP ... FLORIDA RIVER FLOW PATTERNS AND THE AMO ... Of those sites with a SRP and a period of record of at least 60 years, only one, the **Econlockhatchee River**, showed an overall increase in flows between ...
Cited by 62 Related articles All 3 versions Cite Save

[CITATION] Hydrologic and water quality modeling of the Econlockhatchee River watershed using Hydrological Simulation Program–Fortran (HSPF)
Y Jia - St. Johns **River** Water Management District, 2008
Cited by 3 Related articles Cite Save

<https://cida.usgs.gov/nldi/huc12pp/140801040102/navigate/DD/wqp?distance=500>
(WQP sites 500 km downstream of Gold King Mine)



Possible new use case:

Aquatic Ecology Use Case

- ❖ Discussions in SSWD meetings
- ❖ Opportunity to engage another sector of users
- ❖ Exploratory working group forming
 - Membership recruiting
 - Initial scoping

Governance

Relation between OWDI and NGDA Water-Inland Theme

- ❖ Better alignment to reduce duplication of effort
 - Theme strategic plan
 - Implementation plan
- ❖ OWDI is broader than NGDA Water-Inland Theme
 - Includes many non-NGDA datasets
 - Is based on spatial framework provided by NGDA datasets (NHD and WBD)

Much remains to be done...

Open Water Web

Water Data Catalog

- Data quality information for observations
- Machine readable ontologies

Water Data as a Service

- ◆ Testing of NHDPlus V2.1 in cloud – make permanent and scale up
- ◆ Metrics of service usage needed
- ◆ Many more datasets

Enriching Water Data

- ◆ Network upstream/down stream trace in beta testing
- ◆ Unified scalable spatial framework based on NHDPlusHR

Community for Water Data, Tools

- ◆ Web-based forum (wiki or similar) on GeoPlatform
- ◆ Long-term goal: OPEN is standard operating procedure

OWDI Resources

Water Use Datasets Inventory:

<http://viewer.nationalmap.gov/apps/owdi/>

National seamless NHDPlus V2.1 download:

<https://www.epa.gov/waterdata/nhdplus-national-data>

ArcGIS Online web map showcasing some OWDI data services:

<http://arcg.is/1EIL4bP>

For more information

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